保存科学に関わる活動

保存科学に関わる活動報告
Report on Conservation Science Activities

2003年度に行なった保存科学室の主要な活動を大別して以下に述べる。

1. 館内の空気汚染物質調査

収蔵作品の保管・保存機能のさらなる整備と充実を図るために、新たに版画素描専用の収蔵庫、閲覧室を建設した。この新設工事に伴い室内および収蔵棚内の空気汚染調査を実施した。部屋自体の建築材料についてはこれまでに行なった調査、経験などにより、有害な化学物質が多量に放散されることのない材料が選定されたため、施工後の室内空気の清浄化には大きな問題はなかった。その一方で収蔵棚に関しては、棚内にホルムアルデヒドが多く放散されていることが判明した。これは金属塗装材料に関する事前の調査不足が原因である。収蔵棚内は小さな閉じた空間に作品が置かれ、空気の循環が少ないため、作品を入れる前にできる限り清浄な空気環境にする必要がある。そのため工事完了後に作品を収蔵できるようにするまでに想定以上の時間を要した。特にマップケースについては現在もさらに改善が必要で、吸着剤等を使用しながら状況の確認を続けている。今後は工事施工関係者らと協力して、事前調査をより慎重に行ない、工事に当たれるよう体制を整えていきたい。

また、2003年度内に会期が開始した「ヴァチカン美術館所蔵古代ローマ彫刻展」を開催するにあたり、展示ケース内の空気環境を良好に保つために、事前に材料選定のための調査を行なった。この展覧会は当館ではあまり多くない立体作品中心の展覧会であり、これを効果的に展示できるように、これまでとは趣の異なる会場デザインと、数多くの展示ケースを使用した。そのため、新規の造作がこれまでに例をみないほど数多く必要となり、その準備段階において、作品に有害な化学物質の分散が極力少ない材料を慎重に調査・選定し、展示計画に支障なく用意することができた。

2. 前庭彫刻の展示環境に関する調査

1999年度に前庭に再設置した《考える人》および《カレーの市民》の彫刻内部で、著しい結露が生じることがあると昨年度までに判明した。そこで状況を調査し改善策を検討するために、内部の温度、相対湿度の変化を長期間連続で計測した。その結果、夜間から昼頃にかけてブロンズ付近の温度が一度低がった後に再度日照等により充分上昇までの間などに相対湿度が著しく高くなり結露が生じること、また免震ピット内の防水パンに雨水が浸入する等して水がたまった状態が長く続くことがあること、などがわかった。そのため内部空気の乾燥状態を形成させるべく、台座の石接合部の再点検、内部空気の流通を改善する処置等について検討を行なった。

3. その他

例年どおり、館外に貸し出される作品が置かれる環境も管理・記録する目的で、温湿度データロガーを貸し出し作品に装着した。これは同時に借り入れ館に環境の適正な保全・管理を促すことにも良好に寄与していると考えられる。またホルムアルデヒドの絵具に対する影響に関する客員研究員との協同研究などの、保存科学分野から作品調査や保存修復への寄与を行うための研究を行なった。

（塚田全彦）

The following provides a general summary of the activities carried out by the Conservation Science Section during Fiscal 2003.

1. Survey of Indoor Air Quality in the Storage and the Exhibition Gallery

As part of our efforts to appropriately maintain and preserve works in the NMWA collection, a new specialized storage and reference area for prints and drawing media works was built. In connection with construction of this new facility, an air quality survey was carried out in the room interiors and in the new storage shelving area. Based on earlier studies, experience, and the qualities of available material, materials that would not release large amounts of harmful chemicals into the air were selected for construction of this new area. This meant that there were no major problems with purifying the air in the room itself after construction. On the other hand, post-construction air quality surveys found that there was a great deal of formaldehyde released in the shelving area. Insufficient pre-testing led to the selection of metallic shelving with the coating material which released formaldehyde. Storage shelving, by nature, creates small, enclosed spaces which are used for the storage of art works. The low level of air movement in these spaces means that it is essential that the air quality inside the spaces must be cleaned to the greatest degree possible before art works are put into them. The formaldehyde problem caused an unexpectedly long period of time after the completion of construction before art works could be stored in those spaces. In particular, the map cases in the new storage area still require further air quality improvement. Absorbent materials and other methods are being used and the ongoing condition of the area must be reconfirmed. It is hoped that for future construction projects within the museum, a system can be established to encourage cooperation with those involved in the construction, leading to more emphasis on in-depth pre-testing of materials to suit the needs of the museum.

In connection with the *VIXERVNT OMNES: Romani ex imaginibvs* portrait sculpture exhibition held in fiscal 2003, studies were conducted prior to installation in order to select materials that would ensure the maintenance of air quality within the display cases. This exhibition featured a large number of three-dimensional art works, a format the museum did not have in large numbers within its previous special exhibitions, and this meant the use of a large number of display cases and a gallery design with aims that differed from most exhibitions with two-dimensional art works held in the museum. As a result, an unprecedented number of new cases and display elements had to be built. In-depth surveys and selection of materials that would not harm the art works involved were carried out without hindrance during the planning stages of this exhibition.

2. Survey of Sculpture Display Environment in the Museum's Forecourt

During the last fiscal year, it was determined that a great deal of

moisture condensation was occurring on the interior surfaces of *The Thinker* and *The Burghers of Calais*, which had been re-installed in the NMWA forecourt in fiscal 1999. In order to survey the conditions inside the sculptures and to plan ways to improve the conditions, changes in the internal temperature and relative humidity were measured over a long period of time. These tests revealed that during the time frame from night to mid-day, in which the temperature near the bronze surface once descended and then, with the sunlight and heat of the day, ascended considerably once again, the relative humidity inside the sculptures became extremely high, resulting in moisture condensation on the internal surfaces. Further, the influx of rain water and other surface water into the anti-water leak pans placed within the seismic isolation pits of each of the sculptures meant that water gathered and sat beneath the works for long periods of time. These and other specific conditions within each sculpture were determined over the test period. It was determined that a dry internal environment must be created for each of the sculptures, and this lead to a re-examination of the joints of the stone bases, and the consideration of methods and devices which could be employed to improve the airflow within the internal spaces of each sculpture.

3. Miscellaneous Projects

As conducted in each fiscal year, the NMWA conservation department affixed humidity and temperature data logging devices to works sent on loan in order to manage and record the environments in which works lent outside NMWA facilities were placed. In addition to the safety of loaned works, it was also thought that such devices would contribute to the improvement of and maintenance of appropriate environmental conditions within the borrowing institution's facilities. Joint research with guest researchers regarding the influence of formaldehyde on painting materials, and other such research projects, was carried out to contribute conservation science efforts to the study, maintenance, and conservation of art works.

(Masahiko Tsukuda)